

Work Order ID 86266

86266

Page 1

June-26-12 12:42:06 PM

Item ID: D350-748-141TRN

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Turning Detail

Start Date: 26/06/2012 Start Qty: 1.00

1

Required Date: 28/06/2012 Req'd Qty: 1.00

1

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/06/12 Tooling:

Date:

Run Start *NR1*

QC:

Date: SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D350-748-141

F

100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio FA648

2-Turn first side as per Folio FA648

3- File transition lines smooth.

FOLIO REV: AD

DWG REV: E

110

QC1- Inspect dimensions to dimension sheet

0.00

110

QC

Memo

0.00

Quality Control

KC 12-6-12
mmil

KC 12-6-12
mmil

WORK ORDER CHANGES

STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Large-Fab	0.00							
150									
Crosstubes									
Crosstubes	Memo	0.00							
	1-DRILL HOLES FOR HEAT TREAT USING DT9806(HOLES MUST BE ALIGNED ON SAME LINE ON BOTH CUFFS)								
	2-Grind machining marks								
160	Outsource process - Heat Treat	0.00							
160									
Outsource I									
Outsource process - Heat Treat	Memo	0.00							
	Issue P/O: 17555								
	Heat Treat to min 180 KSI As per Dwg D350-748-141 (MIL-T-6736 OR AMS 2759-1C)								
	Sand Blast tube after Heat Treat								
	Possibe Supplier: Vac Aero								
	Ensure Certificate of Conformity is attached								

- DC 12/07/24

> MO 12-7-25

12-07-27

HIO

W/O: 86266		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
		See Pink NCR 12-1980					

Part No: D350-748-141 TRN PAR #: _____ Fault Category: RTU NCR: ☒ Yes ☐ No DQA: ☒ Date: 12/11/02

Resolution: _____ Disposition: Supplier QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12-09-21	160	Supplier did not sandblast on original supplier PO 17555	12-09-21	send for sandblast to remove scale only Issue PO 17977 IMI	12/09/21		12-09-21	DAS 16 8-2 12/11/01
				receive & inspect	12/09/21			

NOTE: Date & initial all entries

Work Order ID 86266

86266

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June-26-12 12:42:06 PM

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Start Date: 26/06/2012 Start Qty: 1.00

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Cust Item ID:

Required Date: 28/06/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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170

Receive & Inspect for Damage & Mat'l Certs

0.00

170

Packaging

Memo

0.00

Packaging

Ensure certificate of conformaty is attached

1x
42/5/09 C 12-8-21

180

QC6- Inspect dimensions to drawing

0.00

180

QC

Memo

0.00

Quality Control

DAS
16
2-3 17/06/09

190

Packaging

0.00

190

Packaging

Memo

0.00

Packaging

Identify and stock in kanban rack
Location: LG

TLW 12-11-1

W/O:		WORK ORDER CHANGES					
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Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

200

QC21- Final Inspection - Work Order Release

0.00

200

QC

Memo

0.00

Quality Control

12/10/31 98

12-10-30

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

Picklist Print

June-26-12 12:42:10 PM

Page 1

Work Order ID: 86266

86266

Parent Item: D350-748-141TRN

D350-748-141TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 26/06/2012

Required Date: 28/06/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 08-03-06 DD verified by:ec
IPP Rev B Removed polish 08.04.02 EC verified by : DD
IPP Rev C Remove LPS-3 08.06.23 EC verified by DD IPP Rev C
11.02.24 as per dwg rev.F DD verf: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D6015-125

Manufactured No

110

Each

32.0000

1

1

D6015-125

**

Crosstube Material

Location

Loc Qty

Loc Code

HALL

32

61380

4

72511

28

KC 12-6-12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 86266
Description: Crosstube Assembly (AS350/355 High Fwd)		Part Number: D350-748-141
Inspection Dwg: D350-748-141 Rev: F		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.243	/		vern	CNC-08
	2.180	+0.005/-0.000	2.184	/			
	2.180	+0.005/-0.000	2.182	/			
	2.237	+0.005/-0.000	2.240	/			
	2.272	+0.005/-0.000	2.277	/			
	2.306	+0.005/-0.000	2.311	/			
	2.339	+0.007/-0.000	2.343	/			
	2.339	+0.007/-0.000	2.344	/			
	0.062	+/-0.010	.062	/		vern	CNC-08
	4.26	+/-0.030	4.26	/		"	
	R0.063	+/-0.010	.063	/		RG	
	R0.50	+/-0.030	.500	/		"	
SIDE B	2.240	+0.005/-0.000	2.242	/		vern	CNC-08
	2.180	+0.005/-0.000	2.185	/			
	2.180	+0.005/-0.000	2.183	/			
	2.237	+0.005/-0.000	2.240	/			
	2.272	+0.005/-0.000	2.277	/			
	2.306	+0.005/-0.000	2.311	/			
	2.339	+0.007/-0.000	2.343	/			
	2.339	+0.007/-0.000	2.344	/			
	0.062	+/-0.010	.062	/		vern	CNC-08
	4.26	+/-0.030	4.26	/		"	
	R0.063	+/-0.010	.063	/		RG	
	R0.50	+/-0.030	.500	/		"	
	110.27	+/-0.060	110.280	/		forge	LG-02

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

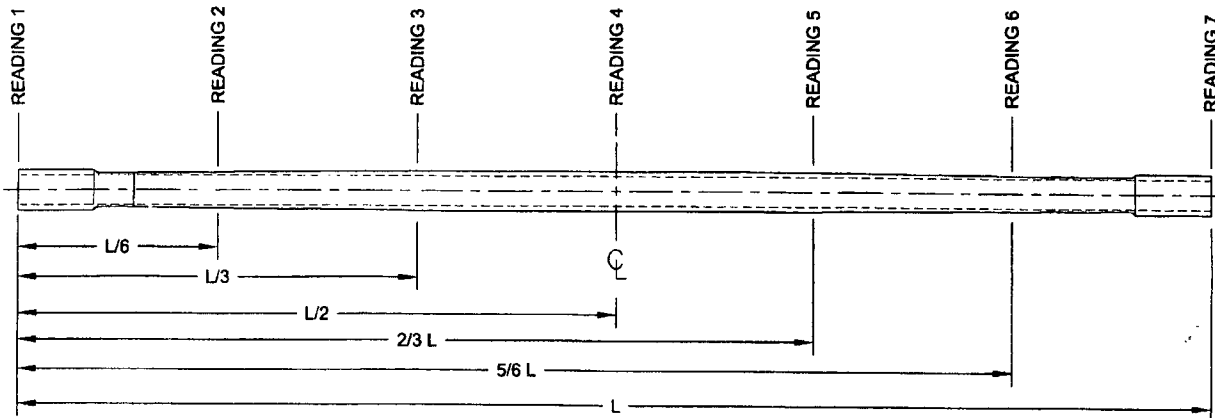
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 86266
Description: Crosstube Assembly (AS350/355 High Fwd)		Part Number: D350-748-141
Inspection Dwg: D350-748-141 Rev: F		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L = 0"	.125	.127	.126	.125	.002	0.030"
READING 2 L = 11"	.112	.100	.098	.109	.014	
READING 3 L = 23"	.160	.136	.136	.154	.024	
READING 4 L = 55"	.180	.174	.173	.177	.007	
READING 5 L = 23"	.144	.158	.144	.132	.026	
READING 6 L = 11"	.097	.112	.109	.094	.016	
READING 7 L = cuff	.125	.129	.126	.122	.007	

Calibration Result

Actual Block Thickness: _____

Sitiescan 250 Measured Thickness: _____

Measured by: <i>man. l</i>
Date: 12/07/11

Audited by: <i>[Signature]</i>
Date: 12-2-23

Preliminary Approval:
Date:

Rev	Date	Change	Revised by	Approved
A	06.11.09	New Issue (P/O D350-748-101)	KJ/JLM	
B	07.10.24	Dwg Rev updated	KJ/EC/DD	
C	11.01.20	Dwg Rev updated	KJ	
D	11.07.26	Tolerance revised for 2.339 dimensions	KJ	
E	12.06.04	Wall thickness form added	KJ	<i>[Signature]</i>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Item	Qty	Part Number	Description
	-141		
1	X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
2	1	D6015-125	CROSSTUBE (OR D6017-115)
3	2	D3502-1	SUPPORT
4	2	D2856-400-710	ABRASION STRIP
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6015-125 OR D6017-115
FINISHED LENGTH = 110.270±0.06
- 2) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-141" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 30.45 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø.297 HOLE.
- 9) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING. ACCEPTABLE TO VERIFY TENSILE STRENGTH BY HARDNESS TEST PER ASTM E18 TO 40-45 HRC.
- 12) INSTALL D2856-400-710 ABRASION STRIPS WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 13) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 14) TORQUE CLAMPS 80 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 15) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 86266 *MLJ*
12/06/26

UNDER REVIEW

RELEASED
2011-01-18

F	ADD HRC TEST OPTION (B8-1) PER PAR 09-040, ADD TWIST LIMIT (A8-1, C1-3), ADD D6015-125 OPTION (C8-1), STOCK DIM NOW MACHINED (D1-4)	CP	10.11.23
E	REVISE GENERAL NOTES; UPDATE TO CURRENT ADD STANDARDS, RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); TOLERANCES (ZN C6-3, D1-3)	RF	09.09.30
D	MAG. PARTICLE AND CAD PLATE AS MFD.	CP	06.10.31
C	ADD CAD PLATING	CP	06.08.14
B	ADD D6017-115 & PRIME AND PAINT	CP	06.06.30
A	NEW ISSUE	CP	06.03.31
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG APPR.			
APPROVED			
DE APPR.			
DATE	10.11.23		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D350-748-141	REV. F SHEET 1 OF 4
TITLE CROSSTUBE (AS 350/355 HI FWD)	SCALE NTS
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W/O:		WORK ORDER CHANGES					
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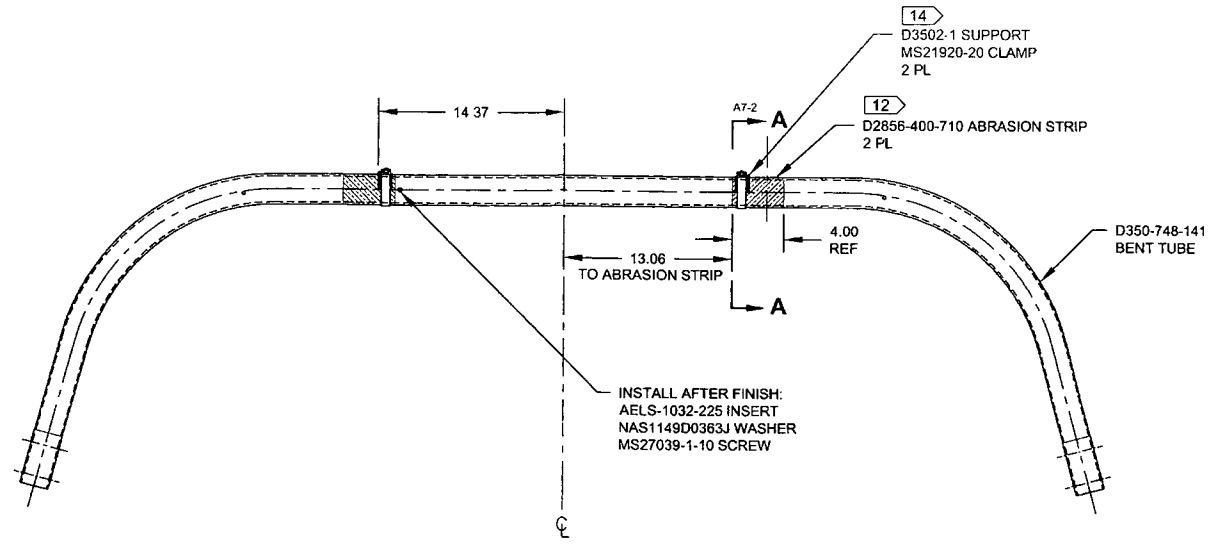
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

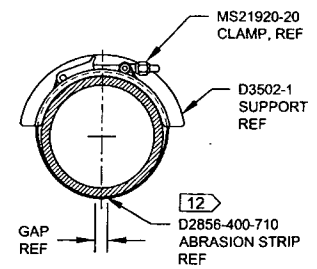
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NOTE: Date & initial all entries

86266



**D350-748-141
ASSEMBLY DETAIL**



UNDER REVIEW
11.07.11

RELEASED
2011-01-18

DESIGN	98	DART AEROSPACE LTD	
DRAWN	98	HAWKESBURY, ONTARIO, CANADA	
CHECKED	98	DRAWING NO.	REV. F
MFG. APPR	98	D350-748-141	SHEET 2 OF 4
APPROVED	98	TITLE	SCALE
DE APPR.	98	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	<small>COPYRIGHT © 2005 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

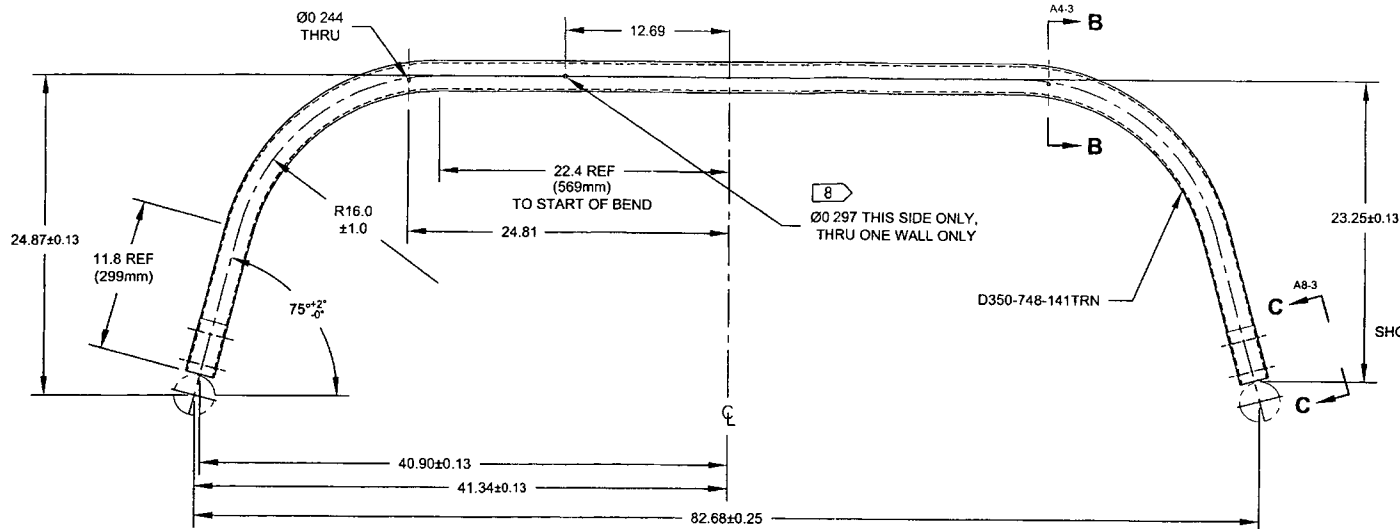
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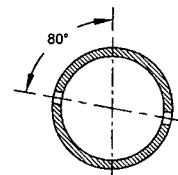
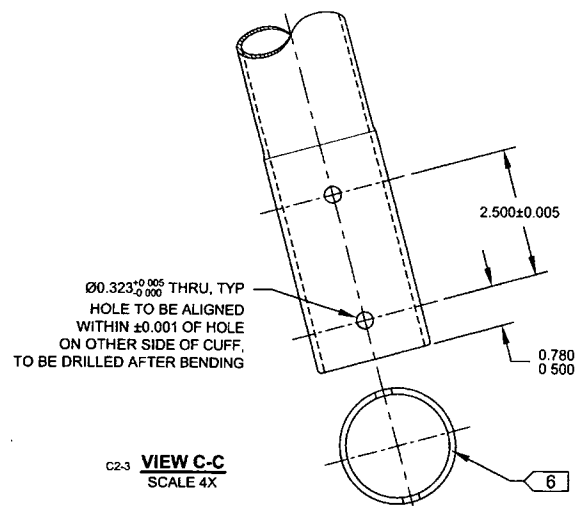
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NOTE: Date & initial all entries



D350-748-141
BENDING AND DRILLING DETAIL 10



UNDER REVIEW

11.07.12

RELEASED
2011-01-18

DESIGN	9P	DART AEROSPACE LTD	
DRAWN	9P	HAWKESBURY, ONTARIO, CANADA	
CHECKED	9P	DRAWING NO	REV. F
MFG. APPR.	9P	D350-748-141	SHEET 3 OF 4
APPROVED	9P	TITLE	SCALE
DE APPR.	9P	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	COPYRIGHT © 2006 BY DART AEROSPACE LTD	
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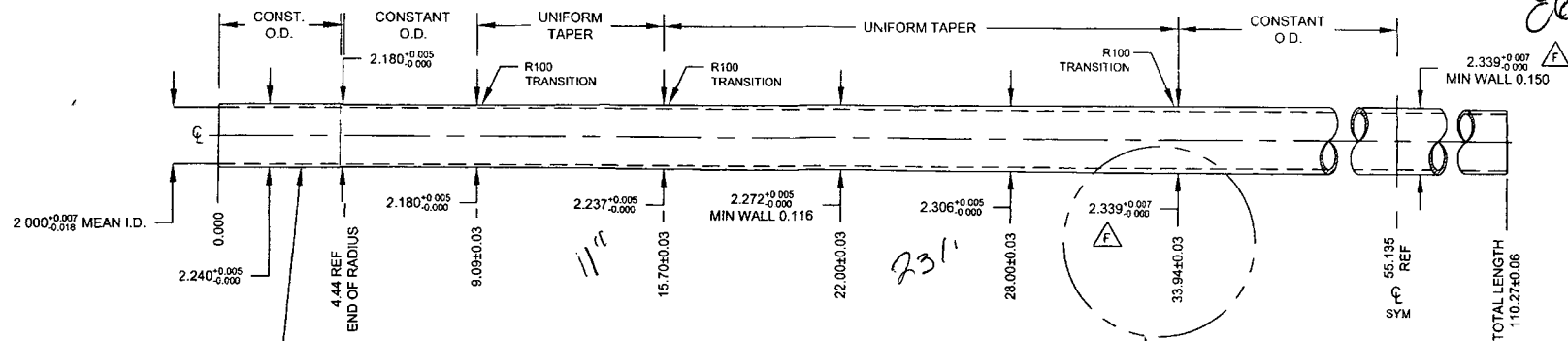
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8 7 6 5 4 3 2 1

86266



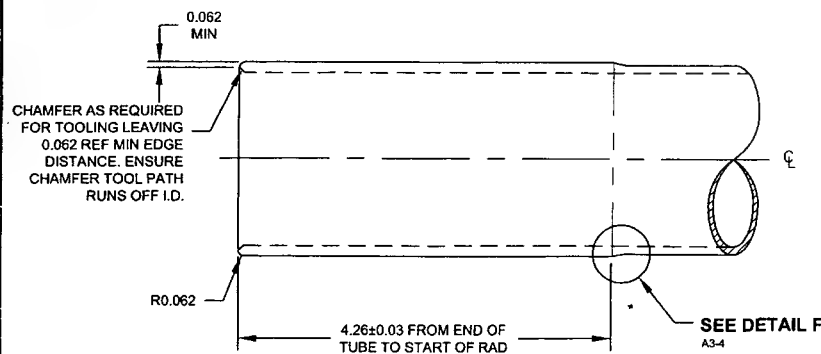
SEE DETAIL D
A6-4

SEE DETAIL E
A14

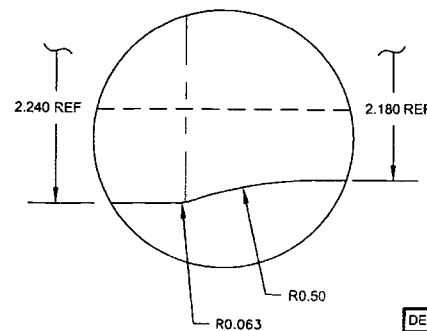
UNDER REVIEW

11.07.12

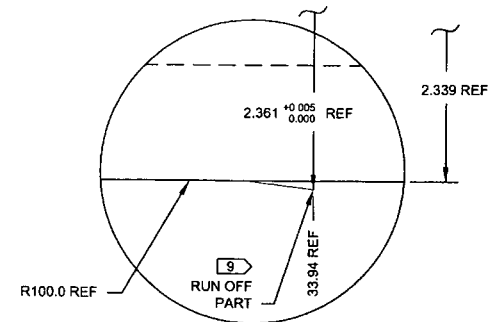
**D350-748-141TRN
TURNING DETAIL**



**DETAIL D:
CROSSTUBE CUFF** C7-4
SCALE 3X



**DETAIL F:
CUFF TRANSITION** A5-4
NOT TO SCALE



**DETAIL E:
TAPER RUN-OFF** C3-4
NOT TO SCALE

RELEASED
2011-01-13

DESIGN	9P	DART AEROSPACE LTD	
DRAWN	9P	HAWKESBURY, ONTARIO, CANADA	
CHECKED	JS	DRAWING NO.	REV. F
MFG. APPR.	JS	D350-748-141	SHEET 4 OF 4
APPROVED	JS	TITLE	SCALE
DE APPR.	JS	CROSSTUBE (AS 350/355 HI FWD)	NTS
DATE	10.11.23	COPYRIGHT © 2006 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR FOR THE COMMUNICATION TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

METLAB
1000 E. MERMAID LANE
WYNDMOOR, PA 19038

Packing I
Sales Order No.

Sales Order:
Aug 1.

Voice: 215-233-2600
Fax: 215-233-5653

Sold To:
DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Ship To:
DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Customer ID	PO Number	Payment Terms
DARA	PO17555	Net 30 Days
Ship Via		Process
R & L CARRIER		HT

Quantity	Item	Description	Total Shipped	This Shipr
1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		
1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		
1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		
1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		
1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		

COMMENTS

SHIPPED BY, SIGNATURE
METLAB

DATE

RECEIVED BY, SIGNATURE
DART AEROSPACE

DATE

METLAB
1000 E. MERMAID LANE
WYNDMOOR, PA 19038

Packing I

Sales Order Nu

7

Sales Order

Aug 1,

Voice: 215-233-2600

Fax: 215-233-5653

Sold To:

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Ship To:

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Customer ID	PO Number	Payment Terms
DARA	PO17555	Net 30 Days
Ship Via		Process
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1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		
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1.00	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT		

COMMENTS

SHIPPED BY, SIGNATURE
METLAB

DATE

RECEIVED BY, SIGNATURE
DART AEROSPACE

DATE



1000 E. Mermaid La., Wyndmoor (Phila.) PA 19038-8093
Tel. (215) 233-2600 Fax (215) 233-5653

Invoice

Invoice Num

0114

Invoice D

Aug 16, 20

Sold To:

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Ship To:

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

Customer ID		Customer PO	Payment Terms	
DARA		PO17555	Net 30 Days	
Shop Order No.		Shipping Method	Ship Date	Due Date
73276		R & L CARRIER	8/16/12	9/15/12
Quantity	Item	Description	Unit Price	Extensi
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20
1	EACH	D350-748-241TRN HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-IC) SANDBLAST AFTER HT	205.000	20

ANY DISCREPANCIES MUST BE REPORTED WITHIN 10 DAYS AFTER RECEIPT.

We accept AMEX, Visa & Master Card



Heat Treating and Metallurgical Consulting

Subtotal	Conti
Shipping/Handling	
Total Invoice Amount	Conti
Payment Received	
TOTAL	Conti

Visit our Web Site: <www.thomasregister.com/metlab/>



Aug 16, 2

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7

ANY DISCREPANCIES MUST BE REPORTED WITHIN 10 DAYS AFTER RECEIPT.



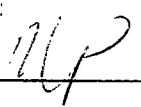
MTI
MASTER CRAFTSMAN
METAL TREATING INSTITUTE

Heat Treating and Metallurgical Consulting

Visit our Web Site: <www.thomasregister.com/metlab/>

North American Free Trade Agreement Certificate of Origin

Please print or type

1. Exporter's Name and Address: Metlab 1000 E. Mermaid Lane Wyndmoor, PA 19038		2. Blanket Period: (dd/mm/yyyy) From: 01/01/2012 To: 31/12/2012			
Tax Identification Number: 23-2973306					
3. Producer's Name and Address: Metlab 1000 E. Mermaid Lane Wyndmoor, PA 19038		4. Importer's Name and Address: Dart Aerospace 1270 Aberdeen Street Hawkesbury, ON K6A 1K7 CANADA			
Tax Identification Number: 23-2973306		Tax Identification Number: 23-2973306			
5.	6.	7.	8.	9.	10.
Description of Good(s)	HS Tariff Classification Number	Preference Criterion	Producer	Net Cost	Country of Origin
Heat Treatment Services	8483.401	C	Yes	No	USA
11. I CERTIFY THAT:					
<p>* the information on this document is true and accurate and I assume the responsibility for proving such representations. I understand that I am liable for any false statements or material omissions made on or in connection with this document;</p> <p>* I agree to maintain, and present upon request, documentation necessary to support this Certificate, and to inform, in writing, all persons to whom the Certificate was given of any changes that would affect the accuracy or validity of this Certificate;</p> <p>* the goods originated in the territory of one or more of the Parties, and comply with the origin requirements specified for those goods in the North American Free Trade Agreement, and unless specifically exempted in Article 411 or Annex 401, there has been no further production or any other operation outside the territories of the Parties; and</p> <p>* this Certificate consists of <u>One (1)</u> page, including all attachments.</p>					
Authorized Signature: 			Company: Metlab		
Name: Mark Podob			Title: Vice President		
Date: (mm/dd/yyyy) 8/16/2012		Telephone: 215-233-2600		Fax: 215-233-5653	



1000 E. Mermaid Ln., Wyndmoor (Phila.) PA 19038-8093
Tel. (215) 233-2600 Fax (215) 233-5653

ORDER ACKNOWLEDGEMENT

613 632 1053

E-MAILED TO: _____

FAXED TO: _____

QF-4.7.2.2-01

Rev A.5/10/10

CUSTOMER: <i>Dart</i>	PO NUMBER: <i>P017555</i>
DATE MATERIAL RECEIVED: <i>8/1/2012</i>	METLAB QUOTE NUMBER: <i>N/A</i> Or, MINIMUM STD ORDER (CHECK) _____
ESTIMATED SHIP DATE: <i>8/15/12</i>	METLAB S.O. NUMBER: <i>73277</i>

THANK YOU FOR YOUR ORDER. WE WILL MAKE OUR BEST EFFORT TO SHIP YOUR ORDER ON OR BEFORE THE ESTIMATED SHIP DATE SHOWN ABOVE. IF YOU NEED TO CONTACT US REGARDING THIS ORDER, PLEASE REFERENCE THE METLAB S.O. NUMBER SHOWN ABOVE.

QUOTATION MISSING? ☒ OK TO PROCESS WITHOUT *DM*

PURCHASE ORDER MISSING? _____ OK TO START PROCESSING WITHOUT _____

NOTE THAT WE NEED THE FOLLOWING INFORMATION IN ORDER TO COMPLETE YOUR ORDER AND TO MEET THE PROMISED SHIP DATE:

TECHNICAL INFORMATION REQUIRED (LIST) : _____ ON HOLD : YES _____ NO _____

OTHER INFORMATION OR CLARIFICATION: _____ ON HOLD : YES _____ NO _____

RELEASED FOR PROCESSING BY: *DM* DATE: *8/8/12*

ACKNOWLEDGED BY: _____

TODAY'S DATE: _____

SHIPPED DATE: _____

THIS ORDER IS ACKNOWLEDGED WITH THE UNDERSTANDING THAT THE ABOVE PURCHASE ORDER IS IN ACCORDANCE WITH METLAB'S TERMS AND CONDITIONS OF SALE AS SUBMITTED AT THE TIME OF THE ABOVE QUOTATION.



STRAIGHT BILL OF LADING - 1.866.DAY.ROSS

OTT 1983132 0



NIR R-500048-5

BILLER INIT. INITIALES PREPAREES A LA FACTURATION	OFF UNIT DÉCHARGÉ DU VÉHICULE NO.	NO. OF PIECES QUANTITÉ DE MORCEAUX
DAY & ROSS	ON UNIT CHARGÉ DANS VÉHICULE NO.	NO. OF PIECES QUANTITÉ DE MORCEAUX

DATE MONTH DAY YEAR 07 27 12	LEVEL OF SERVICE <input type="checkbox"/> GENERAL	C.O.D. AMOUNT CURRENCY: <input type="checkbox"/> CDN <input type="checkbox"/> U.S.	Pick Up Information Telephone Number: _____ Contact Name: _____ Ready Date & Time: _____ Closing Time: _____
<input type="checkbox"/> PRIVATE RESIDENCE PICK UP <input type="checkbox"/> PRIVATE RESIDENCE DELIVERY <input type="checkbox"/> PALLETS BEING RETURNED <input type="checkbox"/> HAZARDOUS GOODS* <input type="checkbox"/> APPOINTMENT DELIVERY (DATE/TIME)	<input type="checkbox"/> TAILGATE PICK UP <input type="checkbox"/> HEATED SERVICE <input type="checkbox"/> TRADE SHOW PU <input type="checkbox"/> INBOND	<input type="checkbox"/> TAILGATE DELIVERY <input type="checkbox"/> TEMPERATURE CONTROL (TL ONLY) <input type="checkbox"/> TRADE SHOW DELIVERY	
*this shipment contains dangerous goods as set out in the attached shipper's declaration			REQUESTED BY: <input type="checkbox"/> SHIPPER <input type="checkbox"/> CONSIGNEE <input type="checkbox"/> BILL TO <input type="checkbox"/> THIR

SHIPPER DAY & ROSS ACCT. NO. 038326 TEL NO. 6136325200 SHIPPER'S NAME	CONSIGNEE DAY & ROSS ACCT. NO. TEL NO. 215 233
PICK UP ADDRESS DART Aerospace 1270 Aberdeen St HAWKESBURY ON N4A1K7	DELIVERY ADDRESS Mark Podob MetLab 1000 E. Mermaid Lane WYNDMOOR PA 1
CITY PROV. COUNTRY POSTAL CODE	CITY PROV. COUNTRY POSTAL CODE

METHOD OF PAYMENT <input checked="" type="checkbox"/> PREPAID <input type="checkbox"/> COLLECT <input type="checkbox"/> CASH IN ADVANCE AMOUNT _____ CURRENCY: <input type="checkbox"/> CDN <input type="checkbox"/> THIRD PARTY BILL TO ACCOUNT NUMBER _____ <input type="checkbox"/> VISA <input type="checkbox"/> M.C. <input type="checkbox"/> AMX EXPIRY DATE _____ CARD NO. _____	OTHER BILL TO PARTICULARS BILL TO: BILL TO ADDRESS GST: CITY PROV. COUNTRY POSTAL CODE
--	--

SPOT QUOTE NO.	ROUTING OR SPECIAL INSTRUCTIONS	MAXIMUM LIABILITY OF \$2.00/LB OR \$4.41/KG COMPUTED ON THE TOTAL ACTUAL WEIGHT UNLESS DECLARED VALUATION STATES OTHERWISE. PLEASE SEE ADDITIONAL TERMS AND CONDITIONS ON REVERSE.		
NO. OF PCS.	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT <input checked="" type="checkbox"/> LBS <input type="checkbox"/> KGS	DECLARED VALUE <input type="checkbox"/> CDN. <input type="checkbox"/> U.S.	DIMENSIONS
5	cardboard cartons	250		124x13x17
ALL USED HOUSEHOLD GOODS AND PERSONAL EFFECTS SHIPPED AT SHIPPER'S RISK OF DAMAGE				

The uniform TERMS OF CARRIAGE apply to this BILL OF LADING. (See Term and Condition No. 1)

NOTICE OF CLAIM must be submitted in writing within sixty (60) days of delivery. (See Term and Condition No. 2)

The carrier's maximum liability is limited by the TERMS OF CONDITIONS of the Bill of Lading. (See Term and Condition No. 5)

SHIPPER'S REF. NO.	PO 17555
SHIPPER'S SIGNATURE	Brigitte Alder
PRINT	BRIGITTE Golder

PICK-UP DATE	07-27-2012	NO. OF PCS.	
DAY & ROSS DRIVER	DENIS	PURCHASE ORDER	
POWER NO.	270604	TRAILER NO.	16

dln JEN 1275



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO17555**

Purchase Order Date 7/27/2012

PO Print Date 7/27/2012

Page Number 1 of 3

Order From :

METLAB
1000 E. MERMAID LANE
WYNDMOOR, PA 19038
USA

VU-MET001

Contact Name

Vendor Phone 215-233-2600

Vendor Fax 215-233-5653

Vendor Account Nbr

Buyer

Brigitte Golden

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

USD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	84674	D350-748-241TRN	10:40:00 AM Yes	1.00	Day & Ross ppd	\$205.0000	\$205.00
Special Inst: HEAT TREAT TO MIN 180 KSI (MIL-T-6736 OR AMS 2759-1C) SAND BALST TUBE AFTER HEAT TREAT CERTIFICATIONS							
2	84667	D350-748-241TRN	10:40:00 AM Yes	1.00	Day & Ross ppd	\$205.0000	\$205.00
Special Inst: SAME AS ABOVE							
3	84670	D350-748-241TRN	10:40:00 AM Yes	1.00	Day & Ross ppd	\$205.0000	\$205.00
Special Inst: SAME AS ABOVE							
4	84676	D350-748-241TRN	10:40:00 AM Yes	1.00	Day & Ross ppd	\$205.0000	\$205.00

SP 12-8-20

PO Instructions: CROSSTUBE WILL BE LEAVING THIS AFTERNOON WITH DAY&ROSS TRACKING #
OTT19831320

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required - YES NO

Change Nbr: 1

Change Date: 7/27/2012



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO17555**

Purchase Order Date 7/27/2012

PO Print Date 7/27/2012

Page Number 3 of 3

Order From :

VU-MET001

METLAB
1000 E. MERMAID LANE
WYNDMOOR, PA 19038
USA

Contact Name		Buyer	Brigitte Golden
Vendor Phone	215-233-2600	Requisition Nbr	
Vendor Fax	215-233-5653	Tax Resale Nbr	10127-2607
Vendor Account Nbr		Terms	Net 30
		Currency	USD
		FOB	Destination-Collect

Special Inst: SAME AS ABOVE

PO Total: \$2,050.00

PO Instructions: CROSSTUBE WILL BE LEAVING THIS AFTERNOON WITH DAY&ROSS TRACKING #
OTT19831320

Change Nbr: 1

Change Date: 7/27/2012

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required - YES NO

Brigitte Golden

From: Mark Podob <mpodob@metlabheattreat.com>
Sent: Friday, July 27, 2012 11:21 AM
To: Dan Krackovic; Doris Funches; Eugene Roberts
Cc: Brigitte Golden
Subject: FW: PO17555 from Dart
Attachments: PO17555 METLAB.pdf

New P.O. from Dart Aerospace attached.
Thanks.

Mark Podob
Vice President, Marketing and Sales
Metlab
1000 E. Mermaid Lane
Wyndmoor, PA 19038
215-233-2600 Ext. 232
(F) 215-233-5653
mpodob@metlabheattreat.com

This message and any attachments are intended for the individual or entity named above. If you are not the intended recipient, please do not forward, copy, print, use or disclose this communication to others; also please notify the sender replying to this message and then delete it from your system.

From: Brigitte Golden [<mailto:bgolden@dartaero.com>]
Sent: Friday, July 27, 2012 11:19 AM
To: Mark Podob
Cc: 'Linda Lacelle'
Subject: PO17555 from Dart

Please find attached the PO
Thank You

From: Linda Lacelle [<mailto:llacelle@dartaero.com>]
Sent: Thursday, July 26, 2012 2:36 PM
To: mpodob@metlabheattreat.com
Cc: Brigitte Golden
Subject: more tubes

Hi Mark,

We will be shipping out 9 tubes tomorrow for heat treat. Another batch should follow end of next week. As always, I need these asap..

Thx!

Linda Lacelle
Production manager
Dart Aerospace



Packing Slip

772 MAIN STREET E., P.O. BOX 3,
HAWKESBURY, ONTARIO K6A 2R4

TEL: (613) 632-0921
FAX: (613) 632-2681

Date _____

Sep 24, 2012

Page

.

Shipment Number

SH005312

Sol: $\frac{1}{2}$

Ship To:

DATE: 1987-05-14
 TIME: 14:00
 NAME: DEEN STREET
 ADDRESS: HAWKEL, ON K6A 1K7
 CITY: CANADA

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURY, ON K6A 1K7
CANADA

PO Number 17979	Customer No. DAR100	Order No. OR005146	Ship Via	Order Date September 24, 2012
--------------------	------------------------	-----------------------	----------	----------------------------------

Order Number	Description	Qty. Ordered	UOM	Qty. Shipped	Qty. Backord.
MS-1234	DART AEROSPACE - SANDBLAST 9 PIPES	9.00	EA	9.00	0.00

Comments

Total weight:

Received 1

Total packages:

***** THANK YOU FOR YOUR BUSINESS *****